

CLAIMS

1. Microfluidic device including a microfluidic chip (10, 30, 50) assembled to an electrospray structure (1, 21, 41), wherein the microfluidic chip includes at least one microfluidic channel (11, 31, 51) leading through an outlet aperture (12, 32, 52) to a surface area of the microfluidic chip, wherein the electrospray structure includes at least one thin, planar point (3, 23, 43), which point is provided with a capillary slot (4, 24, 44) which terminates at the end (5, 25, 45) of the point so as to form an aperture for ejection of a liquid to be sprayed, wherein the electrospray structure is arranged on the surface area of the microfluidic chip so that said point is cantilevered with respect to the microfluidic chip and so that the outlet aperture of the microfluidic device leads to the capillary slot of the point, which microfluidic device also has means for applying an electrospray voltage to the liquid to be sprayed.

20 2. Microfluidic device according to claim 1, characterised in that the microfluidic chip (10, 30, 50) is assembled to the electrospray structure (1, 21, 41) by adhesive (15, 35, 54).

25 3. Microfluidic device according to claim 2, characterised in that, as the adhesive is electrically conductive, the means for applying an electrospray voltage include a layer of said adhesive (15) which extends to the capillary slot (4), at the level of the

outlet aperture (12) of the microfluidic channel (11) so as to form an electrospray electrode.

4. Electrospray device according to claim 3,  
5 characterised in that the means for applying an electrospray voltage include a contact element (16) located on the microfluidic chip (10), electrically connected to the adhesive layer (15) and allowing for an external electrical connection.

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5. Electrospray device according to one of claims 1 or 2, characterised in that the electrospray structure (21, 41) is secured to an electrically conductive element (20, 40) of which a portion is 15 arranged opposite the capillary slot (24, 44), at the level of the outlet aperture of the microfluidic channel, so as to form an electrospray electrode.

6. Electrospray device according to claim 5,  
20 characterised in that the electrospray structure (21) has a contact groove (26) formed transversally in said structure so as to open out at the level of the outlet aperture (32) of the microfluidic channel (31) and expose the electrically conductive element.

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7. Electrospray device according to one of claims 5 or 6, characterised in that the electrically conductive element (20, 40) is an element constituting a substrate for producing the electrospray structure 30 (21, 41).

8. Electrospray device according to one of claims 1 or 2, characterised in that the electrospray structure (41) includes a leg (46) suitable for being received in a recess (53) of the microfluidic chip (50).

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9. Electrospray device according to claim 8, characterised in that the leg (46) has a groove (47), and the leg (46) and the recess (53) are arranged so that the groove (47) ensures the communication of fluid 10 between the outlet aperture (52) of the microfluidic channel (51), located at the base of the recess, and the capillary slot.